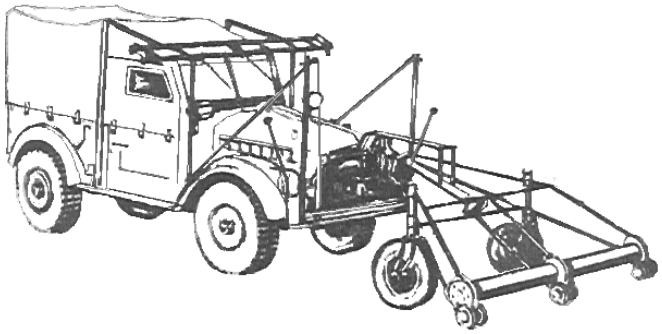
## Russian Vehicle-Mounted Mine Detector DIM



**SYSTEM**

**Alternative Designations:** None
**Date Of Introduction:** Pre-1975
**Proliferation:** Widespread

**Description:**
Crew: 2
Prime Mover: UAZ-469/69 or other light 4x4 vehicles
Components:
- Detection system
- Pneumatic system
- Electronic system

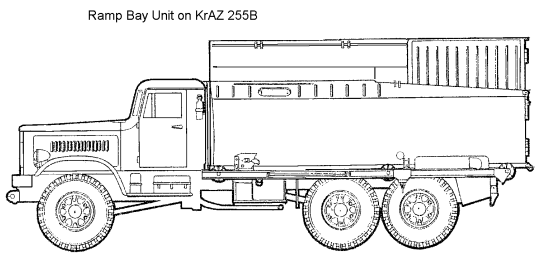
**CAPABILITIES**

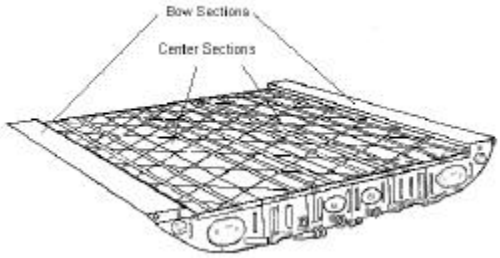
**Operating (scan) Speed (km/h):** 10
**Mounting/dismounting Time (min):** Up to 7
**Detection Ability:** Can detect metallic mines in roadways, airfields, and other flat terrain.
**Max Detection Depth (cm):** 25
**Max Detection Depth While Fording (cm):** 70

**VARIANTS**
None

**NOTES**
The DIM is a large pulse-induction mine-detection device mounted to a light 4x4 truck. The detection element fastens to a frame on the front of the vehicle. When a mine is detected, the vehicle breaking system is engaged and the clutch is disengaged. The full-width detection head, located 2.6 meters from the vehicle's front wheels to provide stopping distance, is divided into six components to pinpoint mine location. The electronic system also displays which component of the mine-detector head the mine is under. It also has attached rollers so that the head does not come in contact with ground objects. Cross-country capability is very limited, therefore the DIM is generally used for clearing prepared surfaces. The detection equipment swings upward to ride on the top of the vehicle cab for traveling. When needed it is swung forward to rest on two wheels.

## Russian Heavy Folding Pontoon Bridge PMP




**SYSTEM**

**Alternative Designations:** Ribbon bridge
**Date of Introduction:** 1961
**Proliferation:** Over 20 countries.
**Description:**
Crew: See Assembly Data
Chassis: KraZ-255B

**BRIDGE**

**Type:** Pontoon
**Total Length of Bridge (m):** 227
**Capacity/Load Class (mt):** 60
**Roadway Width (m):** 6.5
**Working Party:** Varies - approx. 65 for full bridge set. See RAFT ASSEMBLY DATA
**Material:** SKhL-4 steel
**Pontoons in Set:** See NOTES
Bridge/center: 32
Ramp/shore: 4
**Bridge Pontoons:**
Weight (kg): 6,790
Length (m):
- Unfolded: 6.75
- Folded: 6.75

Width (m):
- Unfolded: 8
- Folded: 5

Depth Unfolded (m):
- Bow Section: .9
- Center Section: .7
- Folded: 2

**Ramp Pontoons**
Weight (kg): 7,252
Length (m):
- Unfolded: 5.6
- Folded: 5.6

Width Unfolded (m):
- River End: 7.3
- Shore End: 7
- Folded: 3.1

**RAFT ASSEMBLY DATA**

**40-Ton Raft-Bridge**
Pontoons: 2
- Overall Deck Length (m): 13.5
- Assembly Time (min): 8
- Working Party (est.): 6

**60-Ton Raft-Bridge**
Pontoons: 3
- Overall Deck Length (m): 20.3
- Assembly Time (min): 10
- Working Party (est.): 9

**80-Ton Raft-Bridge**
Pontoons: 4
- Overall Deck Length (m): 27
- Assembly Time (min): 12
- Working Party (est): 12

**NOTES**
Although the complete PMP ribbon bridge set consists of 32 center pontoons and 4 ramp pontoons, the normal bridge unit consists of a half-set (one complete bridge) made up of 16 center and 2 ramp pontoons. Each 4-section is launched from the KrAZ-255B. It automatically unfolds upon entering the water. The sections then lock in place to form a bridge unit 6.75 meters long and 8 meters wide. Normally, all the units are launched simultaneously. They join together parallel to the near shore to form a continuous roadway. The roadway then swings across the water obstacle; powerboats (6 per half-set) hold it in place on the designated centerline.

Engineers can use the full 36-pontoon set to construct 227 meters of bridge. They may also configure it as 40- to 170-ton rafts. A half-set gives the capability to construct 119 meters of 60-ton bridge, 191 meters of 20-ton bridge, or rafts. Under ideal conditions assembly speeds of 7 meters of bridge per minute can result. This bridge can be built in streams with a velocity of up to 2 meters a second (approx. 7 km/h).

## Russian Heavy Folding Pontoon Bridge PMP continued_____

**RAFT ASSEMBLY DATA continued**

**110-Ton Raft-Bridge**
Ramp Pontoon: 1
Bridge Pontoons: 5
Overall Deck Length (m): 39.3
Assembly Time (min): 15
Working Party (est.): 18

**170-Ton Raft-Bridge**
Ramp Pontoon: 1
Bridge Pontoons: 8
Overall Deck Length (m): 59.6
Assembly Time (min): 15
Working Party (est.): INA

**AUXILIARY EQUIPMENT**
Powerboats or tracked amphibians: 12

**LAUNCH SEQUENCE**

1. The travel locks are disengaged, the pontoon carrier backs to the edge of the water, brakes sharply, and then the pontoon slides over the carrier roller system into the water where it unfolds almost immediately.

2. The pontoon is then stiffened by activating six locking devices.

3. Once the pontoons have been launched and stiffened they are interconnected parallel to the near shore to form a continuous strip of roadway.

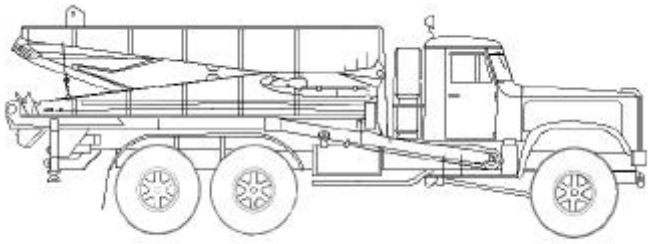
4. This roadway is then swung across the water obstacle and held in place by powerboats.

Whenever possible the launching operations are done along a continuous shoreline permitting all pontoons to be launched at the same time. If necessary, the bridge can be built on a small frontage using the successive raft system. This slows construction time.

**RETRIEVAL**

For retrieval the launch operation is reversed. The pontoon carrier backs to the water's edge, an integral jib is unfolded from the truck bed, and two cables are strung from the winch (located behind the driver's cab) through the jib pulleys, around the pontoon retrieving guides, and secured to the pontoon retrieval studs. The winch simultaneously folds and lifts the pontoon to the truck bed. The jib is then folded back into the truck bed, and the pontoon is winched over the roller system and secured. The whole procedure takes but a very few minutes.

## Russian Truck-Mounted Scissors Bridge TMM



**SYSTEM**

**Alternative Designations:** Mechanized Bridge, Scissors Bridge
**Date of Introduction:** 1964
**Proliferation:** At least 20 countries
**Description:**
Crew: See working party
Chassis: Modified KrAZ-214 (6 × 6), 7,000 kg, or KrAZ-255B (6 × 6), 7,500 kg, and KrAZ-260 trucks.
Weight (mt): 19
Length with bridge (m): 9.3
Height with bridge (m): 3.15
Width with bridge (m): 3.2
Ground Clearance (mm): 360
Gradient (°): 0
Fording Depth (m): 1

**BRIDGE**

**Type:** Truck-mounted scissors
**Capacity/Load Class (mt):** 60
**Material:** Low alloy steel
**Width (m):**
Unfolded: 3.8
Folded: 3.2
**Weight (kg):** 4.24
**Pier:** (TMM on KrAZ-255)
Height (m):
Min: 1.7
Max: 3.21
Ground Area ($m^2$/pier): 2.4
Weight (m): 1.15
Lowering Method: Cable release
Raising Method: Hand winch
Locking Method: Manual

**ASSEMBLY DATA**

**Spans in Set:** 4
**Length of 1 Span (m):**
Unfolded: 10.5
Folded: 5.2
**Total Length of Bridge (m):** 42
**Obstacle Span (m):**
Span: 9.4
Depth: 3
**Roadway Width (m):**
Closed: 3.2
Extended: 5.2
**Assembly Time (min):** 20-40
1 Span: 8-15
4 Spans: 30-60
**Recovery Time (min):** Same as assembly
**Working Party:** 3 per span/12 total

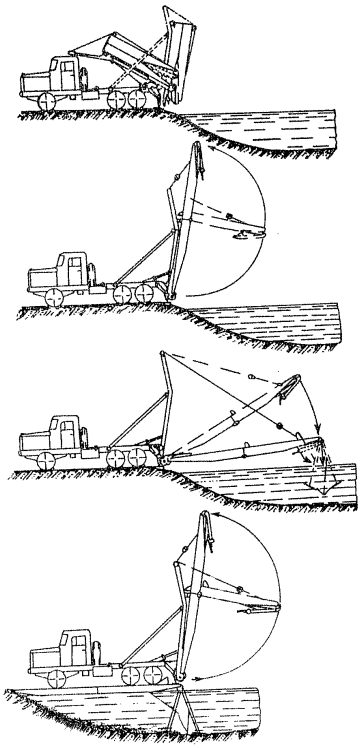
**VARIANTS**

**TMM-3:** KrAZ-255B 6 x 6 improved bridgelaying mechanism.
**TMM-6:** MAZ-543 8 × 8 truck with 17 m bridge spans (unfolded).

**NOTES**
The TMM is a multiple-span, trestle-supported, scissors-type, treadway bridge. One bridge set comprises four 10.5 meter, spans carried on, and launched from specially modified trucks. Spans fold in half for transport. Three of the spans have integral-mounted adjusted (1.7 to 3.2 meters) trestle legs, while the fourth (far-shore) span has none.

During travel, the trestles can fold beneath the scissors plan. A launching girder mounted on the truck bed launches the TMM hydraulically over the tailgate. Assisted by winch cables and pulleys, the girder raises, unfolds, and emplaces the span with the folding trestle legs. If necessary the TMM can be laid underwater. This requires about 50% more emplacement time.

## Russian Truck-Mounted Scissors Bridge TMM continued _____



**LAUNCH SEQUENCE**

1. Truck backs into position.

2. A hydraulic launching girder raises the folded span to the vertical position.

3. The span is straightened by a cable/winch system, and then is lowered with the integral trestle legs swinging into position.

4. Once the lowering operation is completed, the cables are disconnected, the launching girder is brought to travel position, and the truck moves off.